REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons which follow. After amending the claims as set forth above, claims 2-16 and 18-42 are now pending in this application. Claims 1 and 17 have been cancelled. Claims 2, 7, 14-16, 18-20 and 32 have been amended. No new matter has been added.

I. Allowable Subject Matter

Applicants appreciate the indication that claims 36-38 and 42 are allowed and claims 14-18 and 25-31 would be allowable if rewritten in independent form. In response, the limitations of claims 1 and 17 were incorporated into claim 2, the limitations of claims 1, 2, 9 and 12 have been incorporated into claim 14 and claim 16 has been rewritten in independent form.

II. The Rejections Should Be Withdrawn

In the Office Action, claims 1-7, 9, 10, 13, 19, 20, 39, 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Hohn et al. U.S. Patent 6,066,861. Claims 1, 2 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Duggal et al. U.S. Patent 6,294,800. Claims 1, 2, 8 and 39 are rejected under 35 U.S.C. 102(a) as being anticipated by Chisato Japanese Publication 2000183408. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hohn et al. U.S. Patent 6,066,861 in view of Frankel U.S. Patent 6,096,496. Claims 12, 21-24 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohn et al. U.S. Patent 6,066,861. These rejections are respectfully traversed for the following reasons.

A. Claims 1-6, 8-13, 19-20 and 39-40

Without acquiescing to the propriety of the above rejections of claims 1-6, 8-13, 19, 20, 39 and 40, Applicants have rewritten claim 2 in independent form

incorporating the limitations of claims 1 and 17 to expedite the allowance of the present application. Since claim 17 has not been rejected over prior art, Applicants respectfully submit that amended claim 2 and dependent claims 3-13, 18-20 and 39-40 are in condition for allowance.

B. Claim 7

Claim 7 has been rewritten in independent form. Claim 7 recites a luminescent material and a radiation scattering material. Claim 7 requires that the luminescent material comprises an organic dye and that the radiation scattering material comprises radiation scattering particles which are located separately from the organic dye.

In contrast, U.S. Patent 6,066,861 ("Hohn") teaches that the organic dye (i.e., organic pigments) can be used as the light scattering particles or diffusers, but does not teach that the organic pigment or dye can be used as the luminescent material in combination with light scattering particles. Specifically, column 9, lines 19-26 of Hohn states:

> In all the components described above, in order to optimize the color impression of the light emitted and to adapt the emission characteristics, the casting composition 5, optionally the transparent envelope 15, and/or optionally the further transparent envelope 10 may have light-scattering particles, advantageously so-called diffusers. Examples of such *diffusers* are mineral fillers, in particular, CaF_2, TiO_2, SiO_2, $CaCO_3$, or $BaSO_4$, or *organic pigments*. (Emphasis added).

Thus, the organic pigments or dye of Hohn are the light scattering particles which are used in conjunction with a phosphor luminescent material. Therefore, the light scattering particles Hohn are not located separately from the organic pigments or dyes of Hohn, as required by claim 7.

C. Claims 21-31 and 41

Independent claim 21 was only rejected under § 103(a) over Hohn. Applicants submit that Hohn fails to teach or suggest all claim limitations. Claim 21 recites that "the phosphor or organic dye is located over and separately from the radiation scattering particles." In contrast, Hohn requires that the phosphor and the radiation scattering particles are intermixed. Thus, the phosphor of Hohn is not located separately from the radiation scattering particles, if the radiation scattering particles are present in the device of Hohn.

Figure 2 of Hohn shows that casting composition 5 containing the phosphor is located above a transparent envelope 15. If the transparent envelope 15 of Hohn contains light scattering particles, then the casting composition 5 must also contain both the light scattering particles and the phosphor. Thus, in the device of Hohn, the phosphor is not located separately from the light scattering particles, as required by claim 21.

Specifically, column 9, lines 19-24 of Hohn states:

> In all the components described above, in order to optimize the color impression of the light emitted and to adapt the emission characteristics, the casting composition 5, *optionally* the transparent envelope 15, and/or *optionally* the further transparent envelope 10 may have light-scattering particles, advantageously so-called diffusers. (Emphasis added).

Thus, according to this passage, if light scattering particles are present in the device of Hohn at all, then they must be contained in the casting composition 5 because Hohn does not use the word "optionally" in front of the term "casting composition." The light scattering particles may also be located in the transparent envelope 15 and/or in the further transparent envelope 10 (shown in Figure 4) in addition to being located in the casting composition 5 because Hohn uses the word "optionally" before the term transparent envelope.

However, Hohn does not teach or suggest to add the light scattering particles only in the transparent envelope 15 but not into the casting composition 5.

Therefore, if the light scattering particles are present in the device of Hohn, then they must be intermixed with the phosphor in the casting composition. Hohn does not teach or suggest all limitations of claim 21 because claim 21 specifically excludes the arrangement of Hohn, where the phosphor is not present separately from the light scattering particles.

III. Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date 3/13/03

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MARKED UP VERSION SHOWING CHANGES MADE

Below are the marked up amended claim(s):

2. (Amended) [The device of claim 1, wherein:] A light emitting device, comprising:

a radiation source;

a luminescent material; and

a radiation scattering material located between the radiation source and the luminescent material;

wherein:

the radiation scattering material comprises radiation scattering particles located separately from the luminescent material;

a mean diameter of the radiation scattering particles is between $\lambda/3$ and $\lambda/2$, where λ is a first peak emission wavelength of the radiation source;

the radiation source comprises a light emitting diode or a laser diode emitting radiation having the [a] first peak emission wavelength; and

the luminescent material comprises a phosphor which emits radiation having a second peak wavelength in response to incident radiation source radiation.

7. (Amended) [The device of claim 2,] A light emitting device, comprising:

a radiation source;

a luminescent material; and

a radiation scattering material located between the radiation source and the luminescent material;

wherein:

the radiation scattering material comprises radiation scattering particles located separately from the luminescent material;

the radiation source comprises a light emitting diode or a laser diode emitting radiation having a first peak emission wavelength; and

the luminescent material comprises an organic dye which emits radiation having a second peak wavelength in response to incident radiation source radiation.

14. (Amended) [The device of claim 13, further comprising:] A light emitting device, comprising:

a radiation source;

a luminescent material;

a radiation scattering material located between the radiation source and the luminescent material; and

a package supporting the radiation source;

wherein:

the radiation scattering material comprises radiation scattering particles located separately from the luminescent material;

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the radiation source comprises a light emitting diode emitting radiation having a first peak emission wavelength;

the luminescent material comprises a phosphor which emits radiation having a second peak wavelength in response to incident radiation source radiation;

the radiation scattering material comprises the radiation scattering particles located in a carrier medium comprising a transmissive body and [c)] a light or UV radiation scattering particle layer located on sidewalls of a reflector cup portion of the package containing the light emitting diode; and

the radiation scattering particles in the carrier medium are located above the light emitting diode and the luminescent material is located above the radiation scattering particles in the carrier medium.

15. (Amended) The device of claim 14, wherein the radiation scattering material comprises all three of [a), b) and c)]:

a) at least one light or UV radiation scattering particle layer in a glass passivation layer directly over the light emitting diode;

b) light or UV radiation scattering particles in a silicone layer over the light emitting diode or over and on sides of the light emitting diode; and

c) [a] the light or UV radiation scattering particle layer on the sidewalls of [a] the reflector cup portion of the package containing the light emitting diode.

16. (Amended) [The device of claim 9,] A light emitting device, comprising:

a radiation source;

a luminescent material; and

a radiation scattering material located between the radiation source and the luminescent material;

wherein:

the radiation scattering material comprises radiation scattering particles located separately from the luminescent material;

the radiation source comprises a light emitting diode or a laser diode emitting radiation having a first peak emission wavelength;

the luminescent material comprises a phosphor which emits radiation having a second peak wavelength in response to incident radiation source radiation; and

the radiation scattering particles are located in a carrier medium comprising a transmissive body and the radiation scattering particles comprise at least two layers of TiO_2 particles in about a 1 micron to about a 2 micron thick silica layer arranged to achieve photonic crystal effects.

18. (Amended) The device of claim [17] 2, wherein the radiation scattering particles scatter at least 50% more radiation source radiation than luminescent material radiation.

19. (Amended) The device of claim [1] 2, wherein the radiation scattering material does not luminesce and the luminescent material does not substantially scatter light or UV radiation.

20. (Amended) The device of claim 19, wherein the luminescent material comprises a nanocrystalline phosphor [or an organic dye].

32. (Twice Amended) A method of generating white light from a light emitting device, comprising a light emitting diode, a phosphor luminescent material and a radiation scattering material located between the light emitting diode [,] and the luminescent material, wherein the radiation scattering material comprises radiation scattering particles located separately from the luminescent material, and a mean diameter of the radiation scattering particles is between $\lambda/3$ and $\lambda/2$, where λ is a first peak emission wavelength of the radiation source;

the method comprising:

supplying power to the light emitting diode;

generating a directional radiation comprising blue light or ultraviolet radiation having the first peak emission wavelength;

passing the directional radiation through the radiation scattering material to diffuse the directional radiation in a plurality of directions;

providing the diffuse radiation comprising blue light or ultraviolet radiation onto the luminescent material; and

generating white light by emitting radiation having a second peak wavelength from the luminescent material.